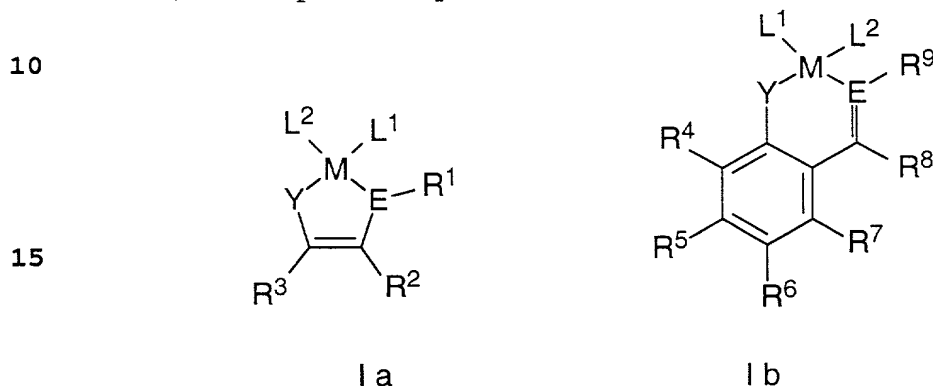


Claims

1. Process for the production of aqueous polymer dispersions by
 5 the reaction of one or more olefinically unsaturated
 compounds [olefin(s)] in aqueous medium in the presence of

a1) a complex compound of the general formula Ia and/or Ib



20 in which the substituents and indices have the following meaning:

- M a transition metal of groups 7 to 10 of the periodic system of the elements,
- 25 L¹ phosphanes (R¹⁶)_xPH_{3-x} or amines (R¹⁶)_xNH_{3-x} having identical or different substituents R¹⁶, ethers (R¹⁶)₂O, H₂O, alcohols (R¹⁶)OH, pyridine, pyridine derivatives of the formula C₅H_{5-x}(R¹⁶)_xN, CO, C₁-C₁₂ alkyl nitriles, C₆-C₁₄ aryl nitriles or ethylenically unsaturated double-bonded systems, x standing for an integer between 0 and 3,
- 30 L² halide ions, amide ions (R¹⁶)_hNH_{2-h}, h standing for an integer between 0 and 2, and furthermore C₁-C₆ alkyl anions, allyl anions, benzyl anions or aryl anions,
- 35 wherein L¹ and L² can be linked to one another by means of one or more covalent bonds,
- E nitrogen,
- 45 Y oxygen, sulfur, N-R¹⁰ or P-R¹⁰,

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- R¹ hydrogen, C₁-C₁₂ alkyl groups, C₇-C₁₃ aralkyl substituents or C₆-C₁₄ aryl groups,
- 5 R², R³ independently of one another
hydrogen,
C₁-C₁₂ alkyl, wherein the alkyl groups can be branched or unbranched,
C₁-C₁₂ alkyl, singly or multiply substituted by identical or different C₁-C₁₂ alkyl groups,
10 halogens, C₁-C₁₂ alkoxy groups or C₁-C₁₂ thio-ether groups,
C₇-C₁₃ aralkyl,
C₃-C₁₂ cycloalkyl,
C₃-C₁₂ cycloalkyl, singly or multiply substituted
15 by identical or different C₁-C₁₂ alkyl groups,
halogens, C₁-C₁₂ alkoxy groups or C₁-C₁₂ thio-ether groups,
C₆-C₁₄ aryl,
C₆-C₁₄ aryl, identically or differently substituted
20 by one or more C₁-C₁₂ alkyl groups, halogens, singly or multiply halogenated C₁-C₁₂ alkyl groups, C₁-C₁₂ alkoxy groups, silyloxy groups OSiR¹¹R¹²R¹³, amino groups NR¹⁴R¹⁵ or C₁-C₁₂ thio-ether groups,
25 C₁-C₁₂ alkoxy groups,
silyloxy groups OSiR¹¹R¹²R¹³,
halogens or
amino groups NR¹⁴R¹⁵,
wherein the substituents R² and R³ can form a saturated or unsaturated 5- to 8-membered ring
30 with one another,
- R⁴ to R⁷ independently of one another
hydrogen,
35 C₁-C₁₂ alkyl, wherein the alkyl groups can be branched or unbranched,
C₁-C₁₂ alkyl, singly or multiply substituted by identical or different C₁-C₁₂ alkyl groups,
halogens, C₁-C₁₂ alkoxy groups or C₁-C₁₂ thio-
40 ether groups,
C₇-C₁₃ aralkyl,
C₃-C₁₂ cycloalkyl,
C₃-C₁₂ cycloalkyl, singly or multiply substituted
by identical or different C₁-C₁₂ alkyl groups,
45 halogens, C₁-C₁₂ alkoxy groups or C₁-C₁₂ thio-ether groups,
C₆-C₁₄ aryl,

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- 5 C₆-C₁₄ aryl, identically or differently substituted by one or more C₁-C₁₂ alkyl groups, halogens, singly or multiply halogenated C₁-C₁₂ alkyl groups, C₁-C₁₂ alkoxy groups, silyloxy groups OSiR¹¹R¹²R¹³, amino groups NR¹⁴R¹⁵ or C₁-C₁₂ thioether groups, C₁-C₁₂ alkoxy groups, silyloxy groups OSiR¹¹R¹²R¹³, halogens,
- 10 NO₂ groups or amino groups NR¹⁴R¹⁵, wherein pairs of neighboring substituents R⁴ to R⁷ can form a saturated or unsaturated 5- to 8-membered ring with one another,
- 15 R⁸, R⁹ independently of one another hydrogen, C₁-C₆ alkyl groups, C₇-C₁₃ aralkyl substituents or
- 20 C₆-C₁₄ aryl groups, optionally substituted by one or more C₁-C₁₂ alkyl groups, halogens, singly or multiply halogenated C₁-C₁₂ alkyl groups, C₁-C₁₂ alkoxy groups, silyloxy groups OSiR¹¹R¹²R¹³, amino groups NR¹⁴R¹⁵ or C₁-C₁₂ thioether groups,
- 25 R¹⁰ to R¹⁵ independently of one another hydrogen, C₁-C₂₀ alkyl groups, which on their part may be substituted by O(C₁-C₆ alkyl) or N(C₁-C₆ alkyl)₂
- 30 groups, C₃-C₁₂ cycloalkyl groups, C₇-C₁₃ aralkyl substituents or C₆-C₁₄ aryl groups,
- 35 R¹⁶ hydrogen, C₁-C₂₀ alkyl groups, which for their part may be substituted by O(C₁-C₆ alkyl) or N(C₁-C₆ alkyl)₂ groups, C₃-C₁₂ cycloalkyl groups,
- 40 C₇-C₁₃ aralkyl substituents or C₆-C₁₄ aryl groups,
- b) dispersing agents and optionally
- 45 c) organic solvents having low solubility in water,

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- d) the metal complexes a1) being dissolved in a portion or the total quantity of the olefinically unsaturated compounds and/or of the organic solvents c) having low solubility in water and
- 5 e) the portion or the total quantity of the olefinically unsaturated compounds and/or of the organic solvents c) having low solubility in water which holds the metal complexes a1) in solution being present in the aqueous medium as a dispersed phase having an average droplet diameter $\leq 1,000$ nm.
- 10 2. Process as claimed in claim 1, wherein the metal complex a1) is used in combination with an activator a2).
- 15 3. Process as claimed in any of claims 1 or 2, wherein an electrically neutral nickel complex compound is used as the complex compound of the general formula I a and/or I b.
- 20 4. Process as claimed in any of claims 2 or 3, wherein the activator a2) is an olefin complex of rhodium or nickel.
5. Process as claimed in any of claims 1 to 4, wherein ethylene is used exclusively as olefin.
- 25 6. Process as claimed in any of claims 1 to 4, wherein at least two olefins selected from the group comprising ethylene, propylene, 1-butene, 1-hexene and styrene are used.
- 30 7. Process as claimed in claim 6, wherein ethylene is used in combination with propylene, 1-butene, 1-hexene or styrene.
8. Process as claimed in any of claims 1 to 7, wherein anionic, cationic and/or nonionic emulsifiers are employed as the dispersing agents b).
- 35 9. Process as claimed in any of claims 1 to 8, wherein aliphatic and aromatic hydrocarbons, fatty alcohols and/or fatty acid esters are used as the organic solvents c).
- 40 10. Process as claimed in any of claims 1 to 9, wherein the portion or the total quantity of the olefinically unsaturated compounds and/or of the organic solvents c) having low solubility in water which contains the metal complexes a1) in solution and which is present in the aqueous medium as a dis-
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perse phase having an average droplet diameter $\leq 1,000$ nm contains further components.

11. Aqueous polymer dispersion prepared by a process as claimed
5 in any of claims 1 to 10.

12. Use of an aqueous copolymer dispersion as claimed in claim 11
as binding agent in adhesives, sealing compounds, plastic
plasters and surface coatings.

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